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the marsupials. Dr. A. F. A. King read a paper on Sep-tennial Periodicity, drawing attention to the phenomena of menstruation, oestration in animals, gestation, contagions, epidemics and climax of fevers. He was partially supported by Mr. Goode, who said that since the lunar month of four weeks had such an important bearing upon tides, etc., there is no absurdity in supposing that the same cause may have been at work through myriads of years to bring about periodicity as indicated in the paper. Professor Riley, Mr. Ward, the President, Dr. Prentiss, and others, took the opposite side of the question.

THE ANTHROPOLOGICAL SOCIETY.—Major J. W. Powell, the President, being in the Chair, the following papers were read: "Politico-Social Functions," Lester F. Ward; "The Savage Mind in the presence of Civilization," by Otis T. Mason. Mr. Ward first drew attention to the schism which ever manifests itself between theory and practice. Political philosophy taught in the schools is one thing, political rules and maxims of society are quite another. The speaker criticised the interpretation of the old legal school of politics as well as the modern naturalistic school. The latter, in holding that nature's fixed laws cannot be violated, forgot to include in nature the struggles of human reason. This is well exemplified in the anecdote concerning Plato. When about to flog a slave for stealing, the latter thought to get off by crying, "It is my fate to steal." The philosopher quickly reminded the slave that it was also his fate to get thrashed for his theft. The paper took the ground that Society was tending more and more to protection, and, from a large collection of statistics showed that gradually new interests were passing under control of the State. Major Powell warmly endorsed Mr. Ward's remarks, and affirmed that the conviction had been growing upon him in favor of the following view: Society begins with the kinship tie, passes on to the property basis of organization, and culminates in the evolution and protection of industries. Mr. Mason's paper was partly theoretical and partly practical. Under the first head it was maintained that the conflicts of the human family in all time had brought the different races of men face to face with higher and better methods, and from these much aid had been received in their own advancement. The practical portion of the paper related to the education of our Indians. The speaker had gone over the history of the subject, had corresponded with every respectable school and college in the country, and had collected the statistics of government operations from the Indian Bureau. The conclusion arrived at was that much had been wasted through ignorance of anthropological methods, and that the organization of a Bureau of Ethnology had been the wisest scheme the government had undertaken in this regard.

### MICROSCOPY.

We have received from Dr. William Hailes, of the Pathological Laboratory, Albany Medical College, specimens of injected preparations cut with his improved microtome, which was figured and described on page 187, vol. 1, of "SCIENCE." The sections are from the kidney of the cat, and are very perfect, showing the excellence of his microtome and his own methods of manipulation. Dr. Hailes also sends us three photographs of magnified specimens of the Embryo of the Chick, taken, respectively 24, 36, and 72 hours after commencement of incubation. These photographs are highly interesting, and may be seen at our office by those pursuing such studies.

Messrs. Lennis and Duncker, both of Berlin, have published an interesting paper in the Zeitschrift für Mikroskopische Fleischschau on a new parasite with which they have met while performing their official duty. In

examining pork for trichinae they discovered a vermicular *diatomea* imbedded between the muscular fibres which they describe in the following terms: It is exceedingly thin and transparent, of a greyish color, and of about the size of the cyst-wall of a trichina.

Professor Leuckardt is inclined to consider its presence in the pork as accidental, and believes that it is of little importance to government inspectors of meat in their official work.

A WRITER in *Nature* makes the following observations on the minute structure of metals hammered into thin leaves which are quite instructive. Notwithstanding the great opacity of metals it is quite possible to procure, by chemical means, metallic leaves sufficiently thin to examine beneath the microscope by transmitted light. Such an examination will show two principal types of structure, one essentially granular and the other fibrous. The granular metals, of which tin may be taken as an example, present the appearance of exceedingly minute grains, each one being perfectly isolated from its neighbors by still smaller interspaces. The cohesion of such leaves is very small.

The fibrous metals, on the other hand, such as silver and gold, have a very marked structure. Silver, especially, has the appearance of a mass of fine, elongated fibres, which are matted and interlaced in a manner which very much resembles hair. In gold this fibrous structure, although present, is far less marked. The influence of extreme pressure upon gold or silver seems to be, therefore, to develop a definite internal structure. Gold and silver, in fact appear to behave in some respects like plastic bodies. When forced to spread out in the direction of least resistance their molecules do not move uniformly, but neighboring molecules, having different velocities, glide over one another, causing a pronounced arrangement of particles in straight lines.

A new edition of Messrs. Beck's catalogue corrected to the first of this month has been received. It is a work of 176 pages, well illustrated and appears to cover all the wants of a microscopist. Mr. W. H. Walmsley, the manager of the American branch of this house, informs us that there is a large demand for microscopes at this time, and that orders are in advance of their means of producing instruments. We notice some change in the prices and that the "Economic" has been raised to \$40 including objectives. Messrs. Beck & Co. have been very successful in producing good models for their microscopes, and their workmanship is excellent. Both Mr. Beck and Mr. Walmsley are accomplished microscopists, and can thus anticipate the requirements of their customers.

### ASTRONOMY.

#### VARIABLE STARS OF SHORT PERIOD.\*

Under the above title, Professor Pickering has read before the American Academy of Arts and Sciences, the second of two papers, both of which are to be regarded as preliminary, rather than final discussions, upon the causes of variability in the light of fixed stars. In the preceding paper (Proc. Amer. Acad. XVI., 1.) the following classification of variables was made:

I. Temporary stars. Examples, Tycho Brahe's star of 1572, new star in Corona 1866.

II. Stars undergoing slight changes according to laws as yet unknown. Examples  $\alpha$  Ceti and  $\alpha$  Cygni.

III. Stars whose light is continually varying, but the changes are repeated with great regularity in a period not exceeding a few days. Examples,  $\beta$  Lyrae and  $\delta$  Cephei.

IV. Stars which every few days undergo for a few hours a remarkable diminution in light, this phenomenon

\* Proceedings of the American Academy of Arts and Sciences, Vol. XVI.